

CLAIMS

1. A flaw detection apparatus for a wire rope of an elevator for detecting a flaw portion of a wire rope of an elevator having a nominal diameter of 4mm to 8mm, comprising:

a plurality of flaw detectors disposed near the wire rope; wherein

each of the flaw detectors has a first and a second magnetic poles of different polarity, and a magnetic sensor of a U-shape disposed between the first and second magnetic poles,

each of the U-shaped magnetic sensors has a bottom radius in the range of 2mm to 5mm, a difference between the bottom radius of the magnetic sensor and a half of the nominal diameter of the wire rope being equal to or less than 1.5mm, and

a distance between sidewalls of the U-shaped magnetic sensors of the adjacent flaw detectors in a plan view is equal to or more than 2 mm.

2. The flaw detection apparatus for a wire rope of an elevator according to claim 1, wherein

the adjacent flaw detectors are staggered relative to a longitudinal direction of the wire rope.

3. The flaw detection apparatus for a wire rope of an elevator according to claim 1 or 2, further comprising:

a filter for filtering to eliminate noises other than signals showing a flaw of the wire rope from signals that are output from the magnetic sensors of the plurality of flaw detectors, wherein

after filtering the noises, all of the rest signals are summed up.

4. The flaw detection apparatus for a wire rope of an elevator according to claim 1 or 2, further comprising:

means for eliminating signals under a threshold value

from signals that are output from the magnetic sensors of the plurality of flaw detectors, wherein

after eliminating the signals under the threshold value, all the rest signals are summed up.

5. The flaw detection apparatus for a wire rope of an elevator according to claim 1, further comprising:

securing members for holding and securing the respective flaw detectors on predetermined positions of an elevator shaft or a machineroom.

6. The flaw detection apparatus for a wire rope of an elevator according to claim 5, wherein

the securing members for holding the flaw detectors are disposed near a hoist.

7. The flaw detection apparatus for a wire rope of an elevator according to claim 6, wherein

the securing members hold the flaw detectors at positions where a side surface of the wire rope which is in contact with a groove of a driving sheave of the hoist and bottom surfaces of the magnetic sensors of the flaw detectors are opposed to each other.

8. The flaw detection apparatus for a wire rope of an elevator according to claim 1, further comprising:

securing members for holding and securing the flaw detectors on an elevator car.

9. The flaw detection apparatus for a wire rope of an elevator according to claim 1, comprising:

means for converting analogue signals, that are output from the magnetic sensors of the plurality of flaw detectors, to digital signals and storing the digital signals.

10. The flaw detection apparatus for a wire rope of an

elevator according to claim 1, further comprising:

a device for displaying a sum of signals that are output from the magnetic sensors of the plurality of flaw detectors.

11. The flaw detection apparatus for a wire rope of an elevator according to claim 1, wherein

each of the U-shaped magnetic sensors covers at least a semi-circumference or more of the wire rope.